

**What is claimed is:**

- 1    1.    A combination of phosphors formulated to coat the inside of a fluorescent  
2           lamp to emit light having a spectral distribution to enhance effective pupil  
3           lumens comprising effective amounts of two or more of the following:  
4           strontium boride, yttrium oxide, barium yttrium, europium, terbium, barium  
5           borate and calcium having a peak luminescence in the scotopic range.
- 1    2.    The combination of phosphors of Claim 1 wherein the power distribution  
2           includes a major peak and a minor peak separated by a trough.
- 1    3.    The combination of phosphors of Claim 2 wherein the percentage of power at  
2           the major peak is at least 5 times the percentage of power at the trough.
- 1    4.    The combination of phosphors of Claim 3 wherein the percentage of power at  
2           the major peak is at least 1.5 times greater than percentage of power at the  
3           minor peak.
- 1    5.    The combination of phosphors of Claim 2 wherein the percentage of power at  
2           the major peak is at least 1.5 times greater than percentage of power at the  
3           minor peak.
- 1    6.    The combination of phosphors of Claim 1 wherein the dominant wave length  
2           is from about 505 to about 515 nanometers.
- 1    7.    The combination of phosphors of Claim 1 wherein the scotopic lumen to the  
2           photopic lumen ratio is at least 2.25.

- 1 8. The combination of phosphors of Claim 7 wherein the effective pupil lumens is  
2 at least  $2.25^{0.78}$  times the photopic lumens measured in the lamp output.
- 1 9. The combination of phosphors of Claim 8 wherein the effective pupil lumens  
2 per watt is at least about 40.
- 1 10. The combination of phosphors of Claim 7 wherein the effective pupil lumens  
2 per watt is at least about 40.
- 1 11. The combination of phosphors of Claim 1 wherein the effective pupil lumens is  
2 at least  $2.25^{0.78}$  times the photopic lumens measured in the lamp output.
- 1 12. The combination of phosphors of Claim 11 wherein the effective pupil lumens  
2 per watt is at least about 40.
- 1 13. The combination of phosphors of Claim 1 wherein the effective pupil lumens  
2 per watt is at least about 40.
- 1 14. The combination of phosphors of Claim 1 wherein the scotopic lumen to the  
2 photopic lumen ratio is about 2.25.
- 1 15. The combination of phosphors of Claim 14 wherein the effective pupil lumens  
2 is  $2.3^{0.78}$  times the photopic lumens measured in the lamp output 0.
- 1 16. The combination of phosphors of Claim 15 where the effective pupil lumens  
2 per watt is about 45.

- 1 17. The combination of phosphors of Claim 14 wherein the effective pupil lumens  
2 is  $2.3^{0.78}$  times the photopic lumens measured in the lamp output.
- 1 18. The combination of phosphors of Claim 1 wherein the effective pupil lumens is  
2  $2.3^{0.78}$  times the photopic lumens measured in the lamp output.
- 1 19. The combination of phosphors of Claim 18 wherein the effective pupil lumens  
2 per watt is about 45.
- 1 20. The combination of phosphors of Claim 1 wherein the effective pupil lumens  
2 per watt is about 45.
- 1 21. The combination of phosphors of Claim 1 wherein the percentages by weight  
2 of the combination of phosphors are about 46 percent strontium boride, about  
3 24 percent each of yttrium oxide and barium yttrium oxide, about 2 percent  
4 each of europium and terbium, and about 1 percent each of barium borate  
5 and calcium.
- 1 22. The combination of phosphors of Claim 1 wherein the percentages by weight  
2 of the combination of phosphors are at least about 40 percent strontium  
3 boride, at least about 20 percent each of yttrium oxide and barium yttrium  
4 oxide, at least about 2 percent of europium and terbium, and at least about 1  
5 percent of barium borate and calcium.
- 1 23. The combination of phosphors of Claim 2 wherein the major peak is between  
2 about 540 and about 550 nanometers.

- 1 24. The combination of phosphors of Claim 23 wherein the minor peak is between  
2 about 480 and about 500 nanometers.
- 1 25. The combination of phosphors of Claim 24 wherein the trough is between  
2 about 560 and about 605 nanometers.
- 1 26. The combination of phosphors of Claim 2 wherein the minor peak is between  
2 about 480 and about 500 nanometers.
- 1 27. The combination of phosphors of Claim 26 wherein the trough is between  
2 about 560 and about 605 nanometers.
- 1 28. The combination of phosphors of Claim 2 wherein the trough is between  
2 about 560 and about 605 nanometers.